

# Eco-labelling Technology – *for you and the planet*

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## Abstract

E-waste, the CO<sub>2</sub> impact of the IT industry, and increasing social demands for corporate social responsibility are the driving forces behind the recent “Green IT” boom. Environmental labelling of IT equipment, therefore, is receiving renewed market attention; yet environmental labelling alone does not reach the hearts and minds of consumers. Acknowledging consumer demands for high performance, functionality, durability and general usability, TCO certifies sustainable technology that meets both environmental and product usability criteria. In a price driven commodity market like the IT industry, aligning user demands with environmental stewardship as a medium of market differentiation has been a dynamic driver for sustainable product design and development. When eco-labelling factors in both product usability and environmental issues, it creates a competitive differentiation advantage for producers as well as leading the IT industry to develop eco-efficient design solutions which satisfy you, the user, and the planet.

## 1 Overview

*The content of this paper is based on the experience of TCO Development (TCO), an international certification programme that makes it easy to choose IT and office equipment that is designed for the benefit of both the user and the environment. For over 20 years, the TCO certification has influenced IT product development toward environmental and human-centred design. Since 1992, the TCO labelling system for computer displays has contributed to improved picture quality, visual ergonomics, reduced electro-magnetic fields, lower energy consumption and a reduction in the use of ecologically hazardous substances.*

IT has grown in importance & scale in the economy. It is both scorned for the negative contribution to climate change and other environmental impacts while simultaneously being heralded as a vital part of the turn around mission. It is widely cited that the IT industry creates approximately 2% of global CO<sub>2</sub> emissions, roughly on par with the airline industry and undeniably a tractable target. E-waste accounts for 5% of solid waste in American landfill sites and is increasing between 3 to 5% annually, three times faster than overall waste stream. In 2006 alone, more than 8 billion kg of E-waste was generated worldwide, of which only 161 million kg, or 2% of the

total, was recovered [1]. Computers and office electronics account for 40% of lead and 70% of heavy metals, including mercury & cadmium, in landfills [2]. This presents a challenge for industry to decrease the environmental impact both through product design and through sustainable practices.

There is, therefore a real sense of urgency within the industry, and also a tremendous sense of opportunity and optimism.

The industry is under pressure to reduce the overall climate impact, perhaps because it can. However energy efficiency, for example, cannot be at the cost of performance – it is technology, after all, that should rescue the planet from this current environmental threat. Therefore, market mechanisms that foster eco-efficient technologies can play a decisive role in shifting the industry culture from one of being part of the problem to being part of the solution. Environmental labelling of IT equipment is hence part of the cultural change.

## 2 Social Value of Labelling

Environmental labelling is often misinterpreted as a policy tool. Government can use labelling in the commercial domain as the market expression of the mandatory fulfilment of legislated regulations on, for

example, safety, and the label reflects the policy, however it is not the policy itself. Eco-labelling, that is the certification of products that have a lower environmental impact compared to like counterparts in the same product category, is not a policy tool. Eco-labelling is a voluntary process, and the criteria fulfilment is neither legislated nor regulated.

The social value of voluntary labelling is that it tends to reflect pressing social or environmental issues of the time. Dolphin-safe tuna and energy efficient electronics were preceded by slave-free sugar by more than 100 years.

Even within labelling of information technology, the social issues have changed over 2 decades. TCO Development [3] began its labelling programme based on electro-magnetic emissions of computer monitors. In 1992, the importance of energy efficiency of IT equipment was recognised, and since then, a wide range of ecological and life cycle criteria have been added to the standards for certification. Labelling criteria is therefore a dynamic process, responding to relevant social and environmental themes in society. Increased social awareness and scientific discovery help us to continually adapt and refine the criteria that guide producers toward development of sustainable products and production processes.

The IT industry experiences perhaps the fastest rate of change in the modern economy. Microchip efficiency, for example, triples every 24 months and power efficiency doubles during the same time period [4]. Environmental labelling of information technology therefore captures the positive potential of this development and can help lead the industry toward sustainability.

### 3 Eco-labelling as a Marketing Tool

The green economy for goods & services is growing twice as fast as conventional counterparts [5] and is creating new market opportunities for both producers and retailers. Greenzer.com, for example, is a newly launched internet portal dedicated exclusively to “green goods”.

Producers respond to the green market opportunity by either creating new products that can be sold under the green banner – the 0 watt monitor, for example – or adapting product content and production processes to fulfil 3<sup>rd</sup> party certification requirements for an eco-label such as the TCO certification for IT office products. The marketing value of the eco-label offsets administration and testing costs, and lends a positive public relations image to the certified producer. A 3<sup>rd</sup> party verification process helps to avoid

unsubstantiated green claims [6] or so-called “greenwash”, and aids the consumer in making an informed purchase choice.

There exists a current trend toward marketing technology that is energy efficient as “green”. In addition to significant CO<sub>2</sub> output, IT products contain substantial heavy metals and toxins, and fall inherently short of the description of “environmentally friendly”. Eco-labelling identifies environmentally *preferable* equipment within a product range and thereby helps to reduce consumer confusion concerning sustainability indicators. Self-claims which are so often false claims, and frivolous green marketing that are based on less than holistic product assessment both confuse the would-be green consumer and undermine the huge potential within the IT industry to lead the market toward greener processes and greener products. A 3<sup>rd</sup> party verification of products that are designed for the environment provides reassurance and credibility in the green marketing frenzy. Further, a 3<sup>rd</sup> party certification that is accepted across the industry creates market value for certified producers by positioning themselves as front-runners in technological development and committed to environmental stewardship and corporate responsibility. These reputation and image benefits are preferred to any short-lived market advantage gained by spurious claims generated within the company marketing department.

### 4 Meeting Consumer Demand

Studies on eco-labelling repeatedly reveal the so-called egocentric behaviour of consumers. While environmental issues fluctuate in importance, increasing during times of prosperity and current environmental risks, and decreasing during times of economic crisis or other social and geo-political threats, product price, quality and functionality remain constant themes in the decision-making process of the average consumer. In a recent study conducted by TerraChoice Environmental Marketing Inc. [7], it was shown that purchasers prioritise product performance, price, durability, total cost of ownership, *and then* environmental performance. The consumer who consistently buys green is estimated to be between 2 and 4% [8]. The LOHAS (Lifestyle of Health and Sustainability) represent between 15 and 20% of the consumer public, depending on a changing set of personal priorities. So the green consumer is, at best, a moving target.

IT products are not sold on environmental attributes but on performance and usability. The culture of IT values processing speed, picture quality, storage

capacity and drive power. A label for IT and electronic equipment, therefore, must speak to the consumer in a language they understand and represent a culture they value. The TCO label, for example, satisfies both the technical standards in the fast changing cutting edge technology world, while at the same time considering the environmental impact. Hence the label speaks a language that a broad range of consumers understand.

It is only realistic to accept that the current media hype on global climate change, and the latest wave of green IT, while powerful and positive in the policy and market momentum they are creating, will lose the novelty affect and interest of both the media and the consumer public. When global warming is no longer hot news, consumers will revert to their *homo economicus* inspired behaviour, and look to maximise utility of their consumption choice. Hence, a label that also includes non-environmental criteria, such as ergonomic design and product performance, appeals to a broader consumer group by meeting their main interests as well as endures the social waves of increasing and decreasing environmental awareness and concern.

#### 4.1 User Chooser Dilemma

IT equipment within the organizational setting is often selected & purchased by either the IT or procurement department, with little or no contact with the end user. Hence the potential altruistic ambitions of the equipment operators are lost in the organizational structure of the purchasing process. The IT department typically has equipment performance, response time and uptime highest on the tender specs. A multi-attribute label such as TCO covers criteria that include quality & performance, thereby catching the attention of the potential buyer and satisfying their list of needs.

Procurement officers operate on a financial budget and benchmark performance per dollar when they need to benchmark performance per watt. That is where TCO certification flags IT products that have proven energy efficiency and therefore higher performance per watt.

Studies indicate that green purchasing is expected to increase in the coming years. If an organization has put green purchasing or green IT on the corporate agenda, then labelling IT equipment can speed the selection process by classifying certified vs. non-certified goods into simple acceptable or not acceptable tenders.

Hence labelling technology provides potential buyers with the information needed to make informed IT

purchasing decisions based on criteria that satisfy their demands beyond environmental performance.

## 5 Product Development

It is to many a vulgar reality that producers of IT equipment are in the IT business and their core competence is IT, not environmental impact reduction. Their job, and their contribution to social value, is to develop good product. Few economists would refute specialisation and competitive advantage as a solid basis for optimising resource use in the economy. The parameters for efficient resource use, however, have historically failed to include environmental impact, and hence the standard definition of what constitutes a good product has also failed to include efficiency measures, eco-efficient resource application, and negative externalities. Innovation is pursued with narrowly focused goals based on performance or functionality indicators.

A multi-attribute certification programme that includes both product quality & performance and environmental criteria fosters product development that includes both usability *and* environmental aspects. It puts sustainability indicators on the product development agenda, so that good product is designed for functionality and the environment. Further, the label rewards front-runners for innovative technology while keeping the environmental impact in check. It leads to a sustainable development of technologies where the basis for design is economic performance, social usability and environmental impact.

The labelling of technology also has the potential to change industry standards. Certified products that adhere to sustainable standards prove the market viability of eco-efficient design and can lead to *de facto* industry standards and eventually government regulation. The effect of the voluntary label is, therefore, to raise industry standards, eliminate would-be rogue players from the market and to provide consumers with products that meet sustainable standards.

The certification of IT equipment also elevates the competitive framework within the industry beyond a marketing brand rivalry by fostering competition based on innovation and value creation.

## 6 Energy Crisis

The energy crisis, as related to the information technology industry, has two distinct perspectives. On the one hand, the increasing prevalence of technology in every facet of life is increasing global demand for energy. There are a number of concurrent

socio-economic phenomena contributing to the demand. Technology ownership per capita is increasing both in the workplace and in the home. As some technology is consolidating, the printer/scanner/fax merger for example, new technologies and new applications of technology have developed, such as PDAs and GPS tools, thereby increasing the overall product volume per capita. Further, in emerging economies, ownership of computer technology is steadily increasing, and will continue to grow as average household income increases. Additionally, the increasing global population is putting even more pressure on the global need for energy and hence the global need for green IT.

As demands on energy supply increase, electricity costs are also increasing, and make the use phase of technology ownership often the most expensive, often a hidden cost. Within power intense industries, 30% of an average IT budget is for energy which, by 2012, will increase to 50%. Google reportedly spends €50 million per year on energy, which is more than their hardware budget. Energy savings is increasingly a top factor in corporate environmental strategies. Carbon capping, trading and regulation that support a low carbon economy add to the necessity to seek energy efficient technology.

## 6.1 The Climate Issue

In “Your Computer & the Climate” [9], Håkan Nordin calculates the climate impact of the 268 million new computers sold in 2007 by comparing energy-conscious operation of eco-efficient equipment and with sub-optimal operation of eco-deficient product design. Just one hour of operation per day of the new products within this one technology product group consumes 40 million kWh of energy and produces 17,000 tons of CO<sub>2</sub>. A drastic decrease in global CO<sub>2</sub> emissions is necessary to slow the climate change and technology will enable the reduction. Environmental labels can help drive the market incentive of the moral imperative.

While we wait for the development of cheap, renewable, and carbon-free energy sources, technology will play a dual role of 1) reducing its own CO<sub>2</sub> footprint by pursuing eco-efficiency for existing technology and 2) developing new technology that will decrease CO<sub>2</sub> output per capita and lead to a low carbon economy. Once again, a 3<sup>rd</sup> party certification of new technology can help to direct this effort in a transparent way and lead the industry toward creating maximum social value.

# 7 Save the World

## 7.1 Industry Responsibility

The room for environmental savings within the IT industry is significant, as recently outlined in the TCO green paper “Your Computer & the Climate” [10]. Nordin’s paper demonstrates the simplicity of potential energy savings by switching off computers that are not being used and by switching on power-save functions when in active use. Labelling IT equipment that meets superior energy efficiency standards is one powerful step in the move toward reducing the 2% global CO<sub>2</sub> contribution of the IT industry. Virtualisation technology, server consolidation, PC power management and deployment of energy efficient equipment all decrease energy consumption while simultaneously increasing IT operative performance *within the industry*. Performance measures that are 3<sup>rd</sup> party certified will guide producers toward a research & development focus on resource and energy efficiency and help consumers identify eco-efficient IT equipment.

## 7.2 Industry Opportunity

The current media, government, and civil society emphasis on the urgent necessity to reduce CO<sub>2</sub> emissions in all industries and to pursue energy efficiency across all sectors of the economy is possibly the best public relations that the IT industry could imagine without considerable investment.

A pioneering spirit of innovation has long been the hallmark of the IT industry. Technologies are developed long before society in general, and government regulators in particular, understand the consequences of application. An IT labelling scheme that is based on multi-attribute criteria and is developed by a multi-stakeholder interest group, which includes industry, can help to channel the enormous creative power of information technology toward sustainable principles and enhanced social value. Labelling technology based on best-in-class sustainability ranking will help steer the industry toward higher standards and foster a creative effort toward products and services that will enable a low carbon and sustainable economy.

The ICT sector is in a unique position because in addition to adopting green technologies in its own operations, ICT technologies themselves have the ability to enable firms in other sectors as well as consumers to reduce their carbon footprints [11]. Nordin explains how IT has enabled significant environmental savings by creating alternatives to travel such as tele-commuting, “dematerialisation” such as electronic invoicing, and overall improved

equipment performance. Ultimately, as global demand on energy grows, green IT will lead to energy and resource efficiencies that help to enable equitable economic growth and resource sharing.

## 8 Conclusion

Meeting the demands of the modern global economy demand that resource efficiency and efficiency-enabling technology be integrated into IT research & design. Initiatives for Green IT require holistic thinking and a truly sustainable approach, encompassing not only the ecological, but also the economic and social aspect of IT equipment. Labelling of technology can foster and inspire technological development toward a sustainable economy.

## 9 Literature

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